REMARKS

Upon entry of this amendment, claims 1-13 are all the claims pending in the application. New claims 9-13 are added. No new matter is added.

Applicant thanks the Examiner for initialing the references listed on form PTO-1449 submitted with the Information Disclosure Statements filed on October 9, 2001 and November 6, 2001.

I. Foreign Priority

Applicant notes that a certified foreign priority document was filed with the present application on October 9, 2001. Accordingly, Applicant respectfully requests that the Examiner acknowledge the claim for foreign priority and confirm that the certified copy of the priority document has been received.

II. Claim Rejections under 35 U.S.C. § 112

Claim 8 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In particular, the Examiner asserts that the term "very small' is a relative term which renders the claim indefinite. The Examiner also asserts that the specification does not provide a standard for ascertaining the requisite degree and that one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Applicant respectfully disagrees.

It is well settled that during examination, the claims must be interpreted as broadly as their terms reasonably allow. This means that the words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. See MPEP § 2111.01. Thus, if an explicit definition is provided by Applicant for a term, that definition will control interpretation of the term as it is used in the claim.

In the present case, Applicant has provided an explicit definition in the specification for a "very small amount of oxygen." Namely, page 8 of the specification, lines 14-16, sets forth "[t]he expression 'the amount of oxygen is very small' means an amount of oxygen as measured by a conventional apparatus at the detection limit or less; for example, an amount of about 10^{-9} to 10^{-10} atm."

Based on the foregoing, Applicant submits that one of ordinary skill in the art would readily be able to ascertain the meaning and scope of the phrase "very small amount of oxygen" as set forth in the claimed invention. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection.

III. Claim Rejections under 35 U.S.C. § 103(a)

A. Claims 1-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kuroiwa et al. (U.S. Patent. No. 5,296,819) in view of Scheinbeim et al. (U.S. Patent. No. 5,369,995) and Bennewitz et al. (U.S. Patent. No. 4,379,406). Applicant respectfully traverses the rejection on the following basis.

Regarding claim 1, the Examiner recognizes that both Kuroiwa and Scheinbeim fail to teach or suggest the feature of an upper electrode which is joined to a moisture sensitive layer and a portion of an insulating substrate. Nonetheless, the Examiner asserts that one of ordinary skill in the art would have been motivated to combine Kuroiwa and Scheinbeim with the teaching of Bennewitz to arrive at the claimed invention. Applicant respectfully disagrees.

Kuroiwa discloses a moisture sensitive device having an insulating substrate 1, a lower electrode 2, a moisture sensitive layer 3, and an upper electrode 4 (see column 23, lines 11-23). As shown in Figure 1, the lower electrode 2, the moisture layer 3 and the upper electrode 4 are successively formed on the insulating substrate 1. Thus, the upper electrode 4 is disposed on the moisture sensitive layer 3 but makes absolutely no contact with the insulating substrate 1.

Bennewitz, on the other hand, appears to disclose a sensor having an upper electrode 28 which is joined to a moisture sensitive Al_2O_3 layer 24 and a portion of an insulating substrate 12 via chrome bonding layer 20 (see Figure 1). Based on this disclosure of Bennewitz, the Examiner asserts that it would have been obvious to modify the upper electrode 4 of Kuroiwa such that the upper electrode 4 is joined to the moisture sensitive layer 3 and a portion of the insulating substrate 1.

Applicant submits that there is absolutely no teaching in either Kuroiwa or Bennewitz which would motivate one of ordinary skill in the art to modify the upper electrode 4 of Kuroiwa such that the upper electrode 4 was joined to the insulating substrate 1. The Examiner's alleged motivation for making such a change is that "this structure enhances the performance of the

sensor" (See Office Action at page 4). This proffered motivation is conclusory and wholly unsupported by the prior art.

It is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988, emphasis added). When an obviousness determination is based on two or more prior art references, there must be a showing of some " teaching, suggestion, or reason" to combine the references. *See*, *Winner v. Wang*, 202 F.3d 1340, 1348 (Fed. Cir. 2000).

Evidence of a teaching, suggestion, or motivation to combine references may flow from the references themselves, the knowledge of one of ordinary skill in the art, or from the nature of the problem to be solved. See MPEP §2143.01. Although a reference need not expressly teach that the disclosure contained therein should be combined with another, the showing of combinability, in whatever form, must nevertheless be "clear and particular." *See Winner*, 202 F.3d at 1348 (emphasis added).

Here, the motivation proffered by the Examiner is neither "clear and particular" nor does it flow from the prior art. Trying to "enhance the performance of the sensor" is a goal pursued in every single sensor design but does not provide a reasonable explanation as to why a skilled artisan would have been motivated to combine the prior art references and arrive at the specific combination of elements recited in claim 1. Indeed, nothing in the prior art references even remotely suggests that such a combination would have been desirable.

Clearly, none of the applied prior art teaches or suggests the problems solved by the invention or solution thereof. Namely, providing a humidity sensor including a lower electrode

formed from a noble metal, an upper electrode comprising a noble metal porous body joined to the moisture sensitive layer and a portion of the insulating substrate to thereby provide a humidity sensor having enhanced durability which can maintain excellent detection performance over a long period of time even in a severe environment (Page 3, lines 1-13 of the specification).

Based on at least the foregoing, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claim 1.

Claims 2-7 depend from claim 1 and therefore incorporate all of the limitations thereof. Accordingly, Applicant submits that claims 2-7 are allowable at least by virtue of their dependency.

In addition, claim 4 recites the feature of a heater provided in the insulating substrate. The Examiner asserts that Kuroiwa discloses such a feature. Applicant respectfully disagrees. Rather, Kuroiwa discloses a heater 10a which is provided on an insulating substrate (see column 6, lines 52-55). That is, the heater of Kuroiwa is on the substrate, not in the substrate, as is required by claim 4. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection.

B. Claims 5 and 7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kuroiwa et al. (U.S. Patent No. 5,296,819) in view of Scheinbeim et al. (U.S. Patent No. 5,369,995) and Bennewitz et al. (U.S. Patent No. 4,379,406) as applied to claim 1 above, and further in view of Sakai et al. (U.S. Patent No. 6,126,312).

Claims 5 and 7 depend from independent claim 1. Applicant submits that Sakai fails to cure the deficiencies of Kuroiwa, Scheinbeim, and Bennewitz as discussed above with respect to claim 1. Accordingly, Applicant submits that claims 5 and 7 are patentable at least by virtue of their dependency.

C. Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Kuroiwa et al. (U.S. Patent No. 5,296,819) in view of Scheinbeim et al. (U.S. Patent No. 5,369,9950) and Bennewitz et al. (U.S. Patent No. 4,379,406) as applied to claim 1 above, and further in view of Qu et al. (U.S. Patent. No. 5,969,231). Applicant respectfully traverses this rejection on the following basis.

Regarding claim 8, the Examiner recognizes that neither Kuroiwa, nor Scheinbeim, nor Bennewitz teaches the feature of a humidity sensor adapted for measuring humidity in an atmosphere containing a very small amount of oxygen and containing a reducing gas. To cure this deficiency, the Examiner applies Qu and asserts that Qu teaches such a feature at column 1, lines 46-59. Applicant respectfully disagrees.

Qu discloses a sensor for monitoring the concentration of moisture and gaseous substances in the air (see column 1, lines 11-13). By measuring the changes in electric resistance of a metal oxide under the influence of moisture or various gases, the air moisture or gas concentration can be determined (see column 1, lines 56-59). Qu, however, does not disclose or even remotely suggest a humidity sensor adapted for measuring humidity in an atmosphere containing a very small amount of oxygen and containing a reducing gas, as is recited in claim 8.

Furthermore, as explained above, the words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. MPEP § 2111.01. Thus, if an explicit definition is provided by Applicant for a term, that definition will control interpretation of the term as it is used in the claim.

In the present case, an explicit definition is provided in the specification for a "very small amount of oxygen." Namely, page 8 of the specification, lines 14-16, sets forth "[t]he expression 'the amount of oxygen is very small' means an amount of oxygen as measured by a conventional apparatus at the detection limit or less; for example, an amount of about 10^{-9} to 10^{-10} atm."

Further, an explicit definition has also been provided in the specification for "an atmosphere containing a reducing gas." Namely, page 8 of the specification, lines 17-21, sets forth "[t]he expression 'an atmosphere containing reducing gas' means an atmosphere containing a reducing gas (e.g., HC, CO, NO, H_2) in a certain amount or more such that the reducing gas can bring about chemical equilibrium (e.g., CO=3144 ppm, THC - total hydrocarbon (CH_4, C_3H_6, C_7H_8, etc.) - 459 ppm, NO=243 ppm)."

Based on the foregoing, Applicant submits that Qu does not teach or suggest measuring humidity in an atmosphere containing a very small amount of oxygen and containing a reducing gas, as is required by claim 8. Accordingly, Applicant respectfully requests that the rejection be reconsidered and withdrawn.

IV. New Claims

New claims 9-13 have been added. Applicant respectfully submits that new claims 9-13 patentably distinguish over the cited art based on the combination of features recited therein.

V. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Applicants hereby petition for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,

Kenneth Fields

Kenneth W. Fields
Registration No. P-52,430

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

23373

PATENT TRADEMARK OFFICE

Date: March 19, 2003

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 9-13 are added as new claims.